

8. WASTE PRESENT STORAGE LOCATION AND RETRIEVAL INFORMATION

The information provided in this section is based on information in the feasibility study SOW (1993),^a and work by Raivo (1994),^b Wixson (1995)^c and Barnard (1993).^d

8.1 SITE DESCRIPTION

8.1.1 INEL RWMC Site Background

The RWMC, Figures 8-1 and 8-2, consists of two main areas, the Subsurface Disposal Area (SDA) and Transuranic Storage Area (TSA). Solid waste generated by INEL operations and wastes received from offsite generators are routed to smaller specialized locations within these areas depending on content and packaging. In addition, support facilities are provided for the administration, operational, and utility requirements of the RWMC.

8.1.2 Existing Alpha-contaminated Waste Capability

The RWMC was the first DOE facility to achieve waste examination and certification authority for stored TRU waste. The Stored Waste Examination Pilot Plant (SWEPP) provides nondestructive examination (NDE) and nondestructive assay (NDA) capabilities to evaluate waste form compliance with transportation and disposal facility waste acceptance criteria (WAC). The SWEPP, which conducts weighing, real-time radiography, neutron and gamma assay, and container integrity determination, began operations in August 1985. The Drum Venting Facility (DVF) began operations in May 1987. This facility provides capability for remote installation of a carbon composite filter in waste drums to allow pressure equalization and aspiration of radiolytic- and corrosion-generated hydrogen. In August 1990, the RWMC was the first DOE facility to obtain approval to use the TRU Package Transporter (TRUPACT)-II for shipping TRU waste.

Two air support buildings provide accessible storage for approximately 18 percent of the total stored inventory. Recently constructed Type I and Type II Storage Modules provide RCRA compliance storage capacity. Transfer of the waste presently in the Air Support building to the storage modules is currently ongoing. The remaining 82 percent of the total volume is under earthen or geofabric cover.

8.1.3 Sources of Alpha-contaminated Waste

Transuranic wastes stored within the TSA were generated by operations conducted for the U.S. Atomic Energy Commission (AEC), now the U.S. Department of Energy (DOE), and its successor agencies. The

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- a. Statement of Work for a Feasibility Study on Treatment Services for Alpha Contaminated Mixed Low-Level Wastes (December 15, 1993), RFP No. DE-RP07-94ID13278, December 20, 1993.
 - b. B. D. Raivo, *Waste Container Description Information for ALLW Treatment Services Feasibility SOW*, EDF PSPI-015546-03, January 5, 1994.
 - c. J. R. Wixson, Estimated Earthen and Geofabric Covered TRU Waste Inventory in the TSA of the Radioactive Waste Management Complex (RWMC), INEL-95/194, RWMC EDF #837, August 24, 1995.
 - d. C. J. Barnard, *Inventory Analysis of Stored Transuranic (TRU) Waste at the Radioactive Waste Management Complex (RWMC) (Preliminary)*, WM-PD-90-003, Rev. 1, August 31, 1993.

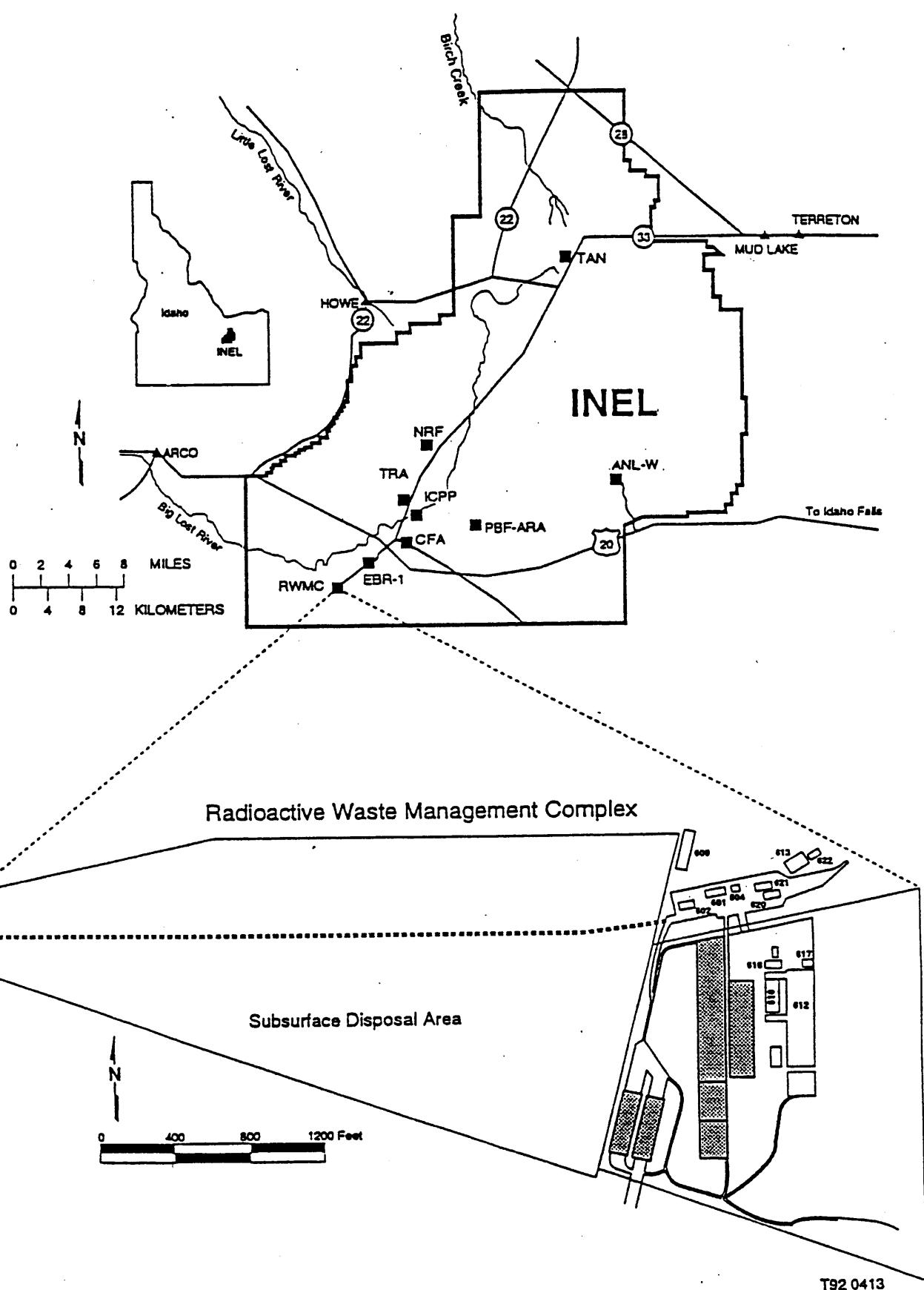


Figure 8-1. Map of the Transuranic Storage Areas (TSA) of the RWMC at the INEL.

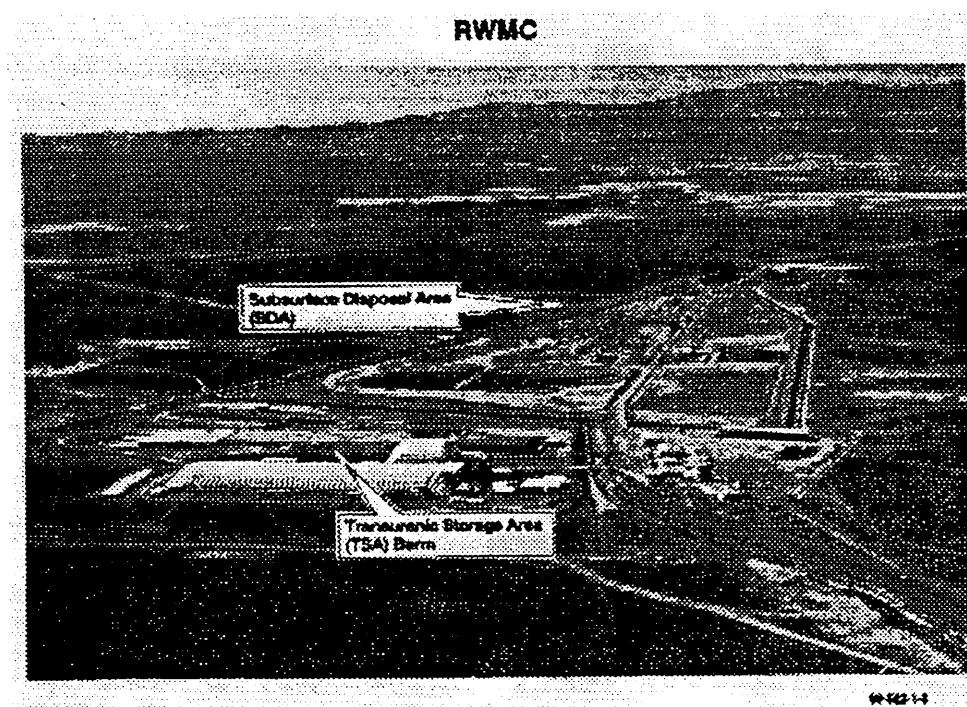


Figure 8-2. Aerial Photo of RWMC.

following facilities have generated the majority of the TRU wastes placed in storage on the TSA: Rocky Flats Plant, Golden, Colorado; Mound Laboratory, Miamisburg, Ohio; Battelle Columbus Laboratories, Columbus, Ohio; Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania; and Argonne National Laboratory-East, Argonne, Illinois. Small volumes of alpha-contaminated waste have also been generated by INEL operations. In addition, the INEL Initial Drum Retrieval (IDR) and Early Waste Retrieval (EWR) projects have contributed to waste placed in storage at the TSA.

8.1.4 Subsurface Disposal Area

From 1952 to 1970, wastes consisting of solid transuranic (TRU) contaminated wastes and low-level wastes (LLW) were buried in a series of pits and trenches located in the area now known as the Subsurface Disposal Area (SDA) located within the RWMC.

In 1970, above-ground storage of TRU contaminated waste was initiated at the Transuranic Storage Area (TSA) at the RWMC. The SDA was the site for two waste retrieval study programs: Early Waste Retrieval (EWR) for pre-1964 wastes, and Initial Drum Retrieval (IDR) for drum-packaged wastes buried between 1968 and 1969. Recovered waste from these studies is stored on the Transuranic Storage Area-Retrieval (TSAR) pad located within the TSA.

8.1.5 Transuranic Storage Area

The TSA is a 55-acre area located adjacent to the SDA along its eastern boundary. Enclosed by a 7-ft security fence, it was originally used for retrievable storage of waste contaminated with greater than 10 nCi/g of transuranic activity per gram of waste. This limit was changed to greater than 100 nCi/g for transuranic activity per gram of waste, as defined in DOE Order 5820.2A. This area has the following specialized storage locations:

- TSA-1 and TSA-2 asphalt-surface/earthen-covered storage pads (typical cell arrangement for retrievable storage of waste is depicted in Figure 8-3)
- TSA-3 asphalt-surface/air-supported building storage pad for examined wastes
- TSA-R asphalt-surface/earthen-covered storage pad
- An Intermediate-Level Transuranic Storage Facility (ILTSF) with engineered vaults
- Type I and Type II Storage Modules.

8.1.6 Support Facilities

The RWMC is divided into several sections. Each section is supported by various personnel and support facilities which are described in the following sections.

8.1.7 Buildings

Several buildings are clustered adjacent to the SDA and the TSA in the northwest corner of the RWMC. Buildings include facilities for Health Physics offices, material storage areas, operations support facilities, domestic and firewater supply systems, emergency generators, personnel change areas and lunch facilities, and heavy and mobile equipment storage. A guard house is located at the entrance to the RWMC. Figure 8-3 shows buildings recently constructed or planned for construction in support of retrieval efforts. The Retrieval Enclosure (Figure 8-4) currently being constructed over the bermed pads will enable year round controlled retrieval of the earthen covered waste.

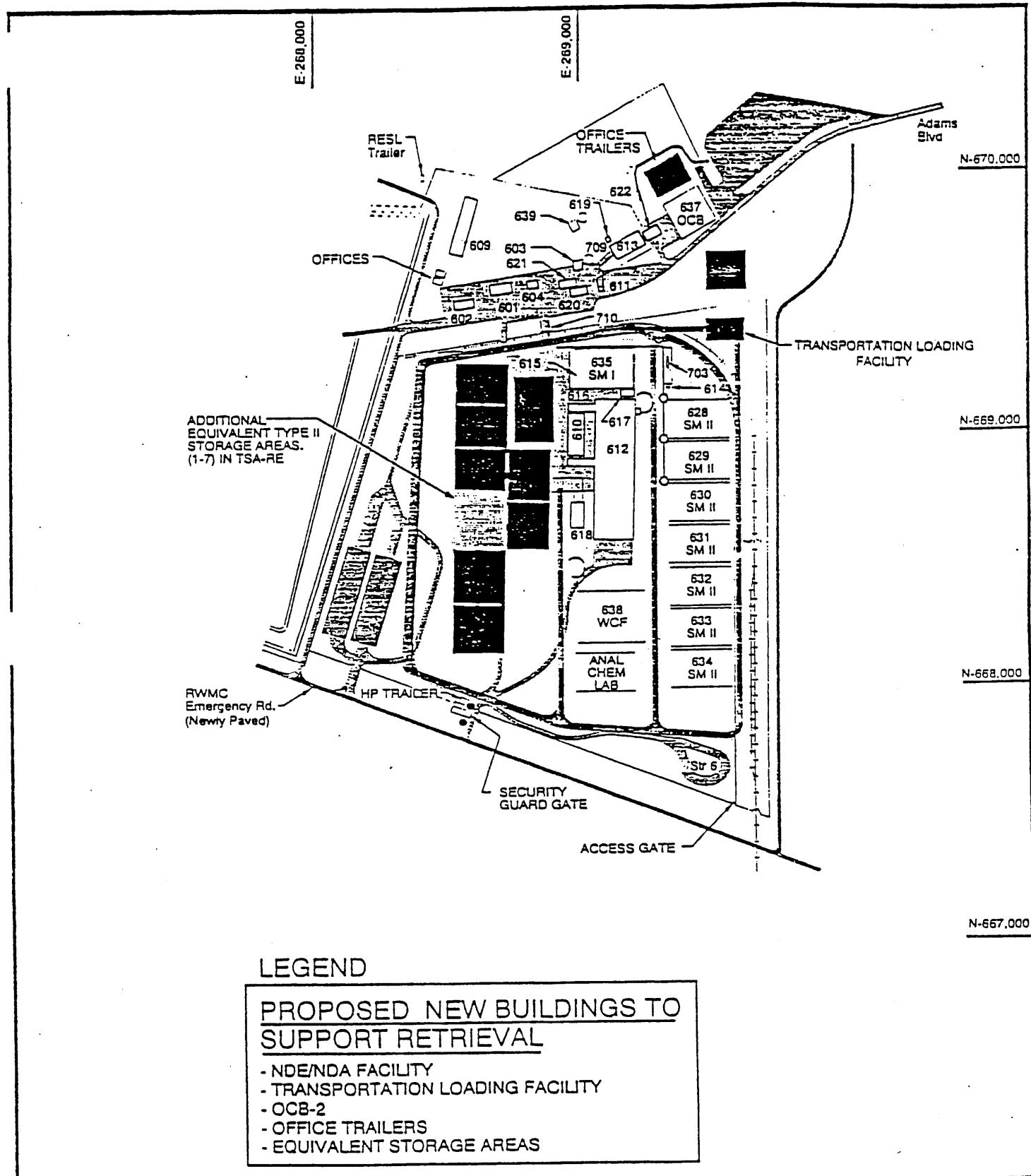


Figure 8-3. Transuranic Storage Area at the RWMC.

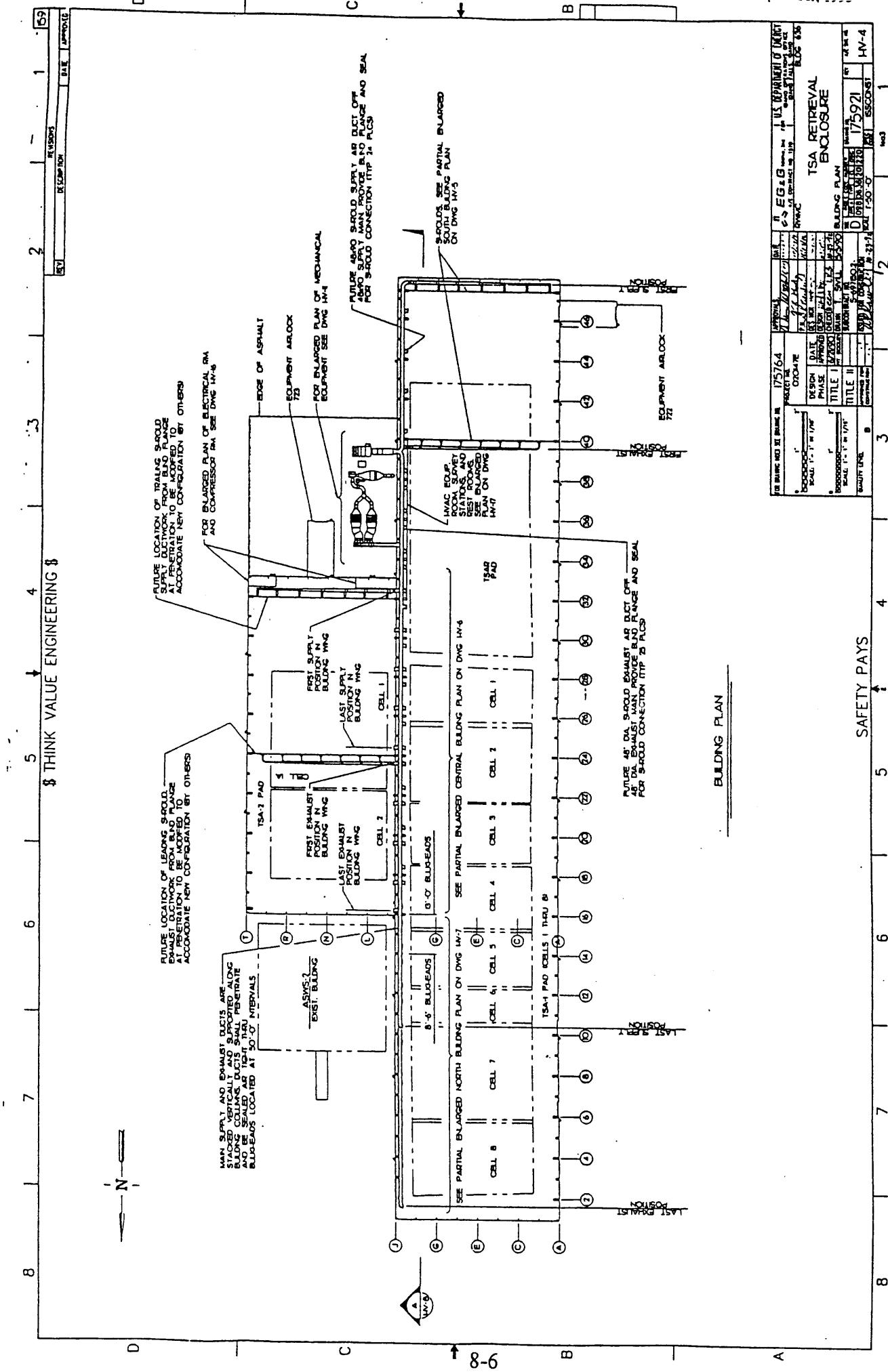


Figure 8-4. TSA Retrieval Enclosure.

Recently constructed are the Type I and Type II storage modules. The function and purpose of these facilities are:

- Type I storage modules are temporary holding modules (buildings) for receiving containers retrieved from current storage. The functions of these modules include venting drums/containers, holding drums/containers for a minimum aspiration period, obtaining gas samples for analysis, and data entry into a database tracking system (barcode).
- Type II storage modules are state-approved RCRA storage modules for added storage capacity and longer-term storage.

Currently under construction is the Retrieval Enclosure (Figure 8-4). The function and purpose of this facility is to:

- Enclose the earthen-covered pads with a facility capable of controlled ventilation and a structure sufficient to enable year round retrieval of the earthen-covered waste.

Planned for or considered for future construction are the Waste Characterization Facility (WCF), and the Operations Control Building (OCB), a Nondestructive Examination/Nondestructive Assay (NDE/NDA) facility, and a transportation loading facility . The function and purpose of these facilities are:

- The Operations Control Building is a new personnel facility for general operations control and administration.
- The Waste Characterization Facility (WCF) is a new facility being considered for the purpose of ensuring the Waste Isolation Pilot Plant waste acceptance criteria (WIPP WAC) is met for the transuranic waste stream ($TRU \geq 100 \text{ nCi/g}$) destined for WIPP permanent storage. The function of the facility is for opening, characterizing, and repackaging sample containers (drums, boxes, and bins) from the transuranic waste stream. Selected containers in the alpha-contaminated low-level (mixed) waste (ALLW/ALLMW) waste stream may also be processed through this facility for additional characterization required to meet statistical sampling requirements for retrieval and packaging of the stored waste. The WCF may also be used for statistical sampling of the returned treated waste forms to verify compliance to Treated Waste Acceptance Criteria.
- A new NDE/NDA facility is being considered to increase current assay, radiography and throughput capability at the RWMC, and meet DOT transportation requirements for transport of waste inventories.
- A transportation loading facility is being considered to enable enhanced loading of transport packaging and transport vehicles.

8.1.8 Railroad Spur

A single-track railroad spur from the Union Pacific Railroad, Mackay line, permits direct rail shipments from offsite generators to the TSA. The dual-track siding at the TSA provides some limited switching capability.

8.1.9 Stored Waste Examination Pilot Plant (SWEPP) (NDE/NDA Facility)

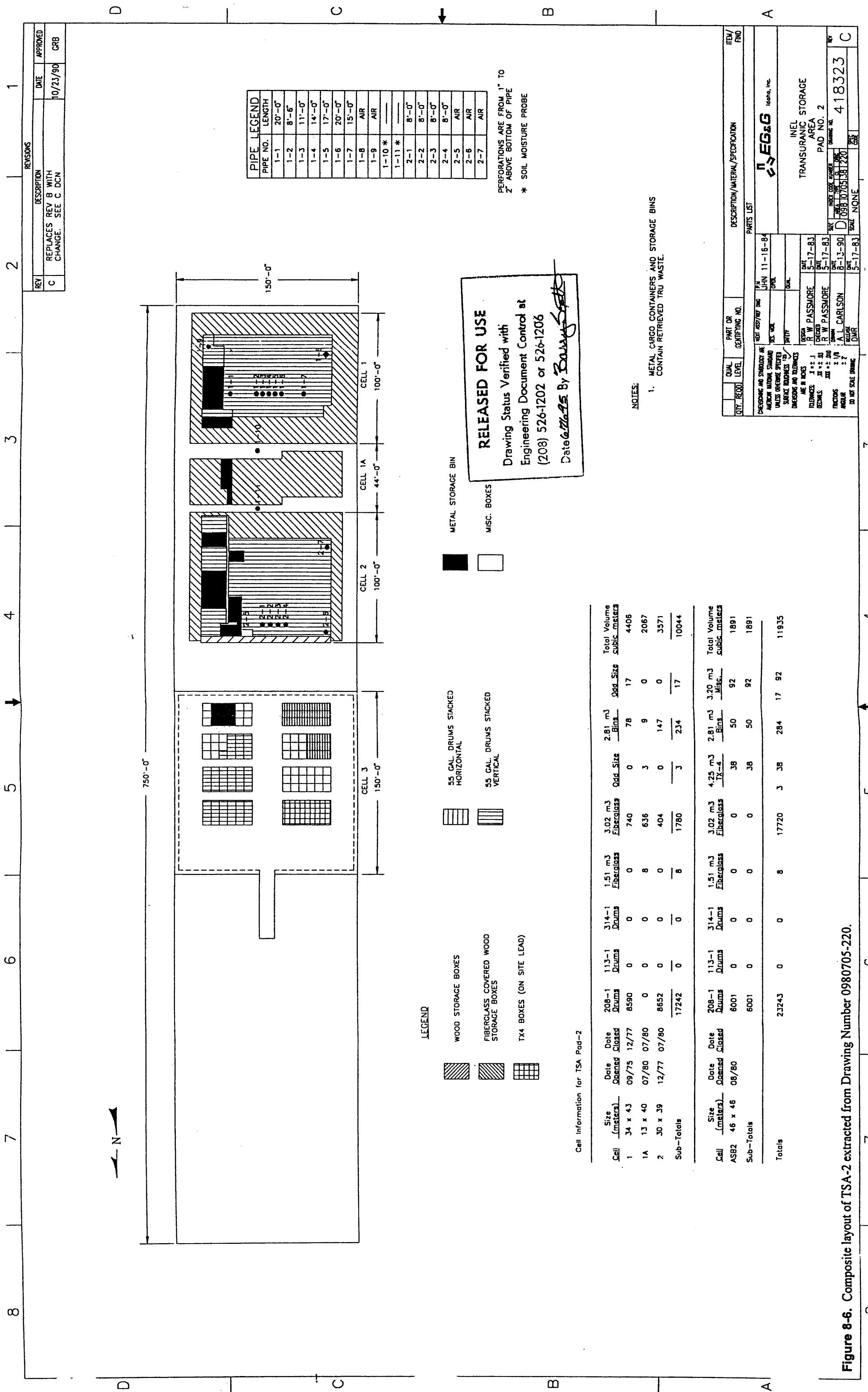
The main purpose of the existing SWEPP facility is to certify contact-handled (CH) TRU waste stored in the TSA-1, TSA-2, and the TSA-R. The SWEPP building, WMF-610, houses the SWEPP examination equipment, data management system equipment and offices for SWEPP operations personnel. Waste drums are vented in building WMF-615 prior to being examined in the SWEPP facility.

8.1.10 Trupact Loading Station (TLS)

The TLS was designed and constructed at the RWMC/SWEPP Facility to support loading of the TRUPACT-II casks for WIPP transport. Construction of the TLS was completed in September 1988. Since completion of construction, all ancillary hardware such as the adjustable center of gravity lift fixture (ACGLF) and stretch-wrap machine have been installed and tested.

8.2 Current Storage and Waste Characterization Information

Approximately 80 percent of the estimated 65,000 cubic meters of waste is contained within earthen-covered berms. These berms are identified as Pad 1, Pad 2, and Pad R. Within each pad are sections identified as cells. Figures 8-5, 8-6, and 8-7 are drawings of Pads 1, 2, and R showing cell locations within each Pad. Figure 8-8 presents a picture of a bermed pad showing typical TSA waste in retrievable storage. The waste was typically transported to the RWMC via ATMX rail cars as shown and unloaded via a crane into the cell locations. Figures 8-9 and 8-10 show typical waste packed in boxes and drums respectively.



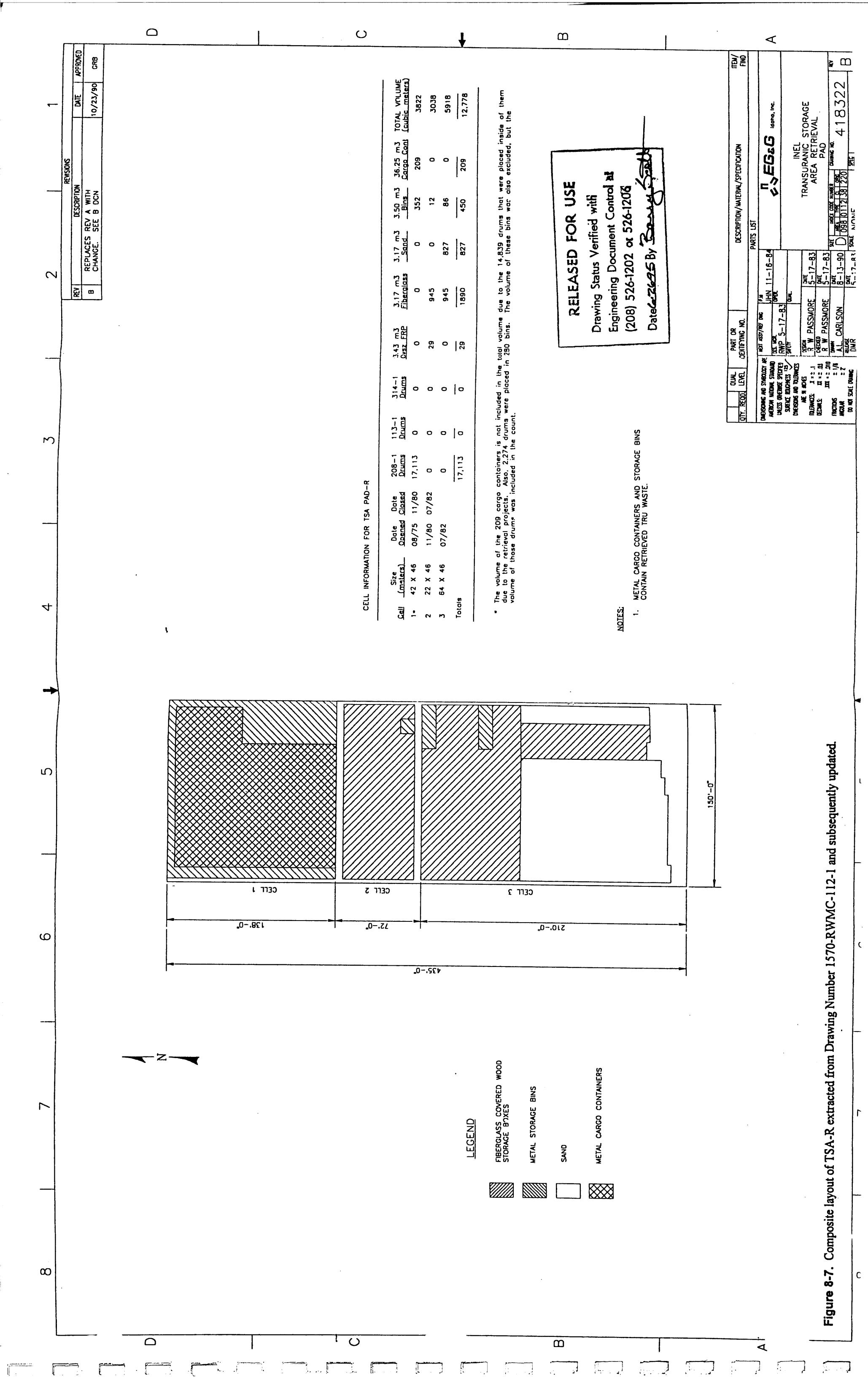


Figure 8-7. Composite layout of TSA-R extracted from Drawing Number 1570-RWM/C-112-1 and subsequently updated.

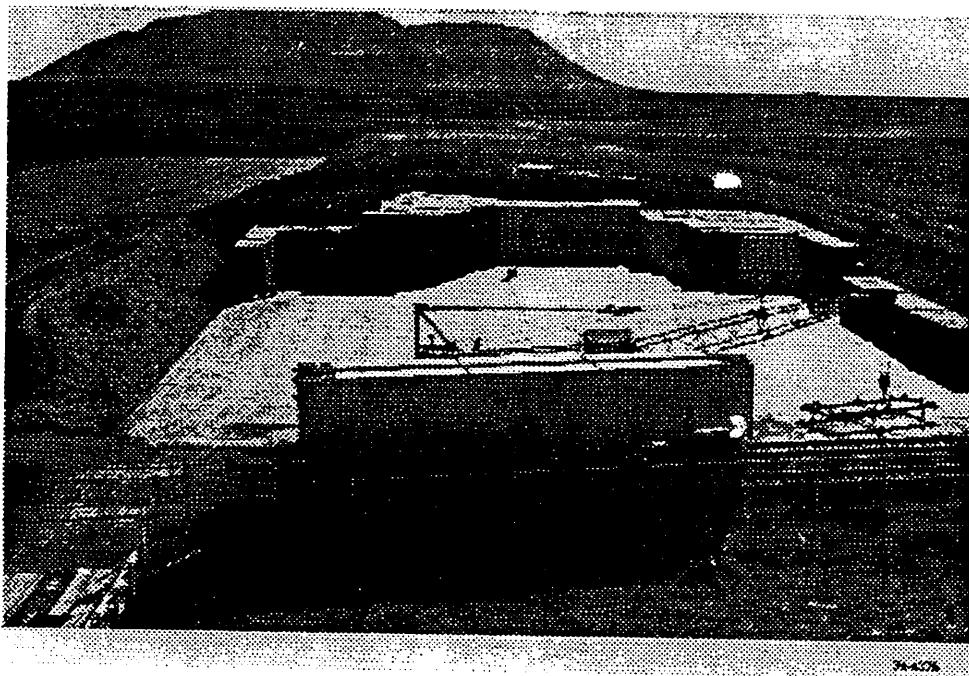
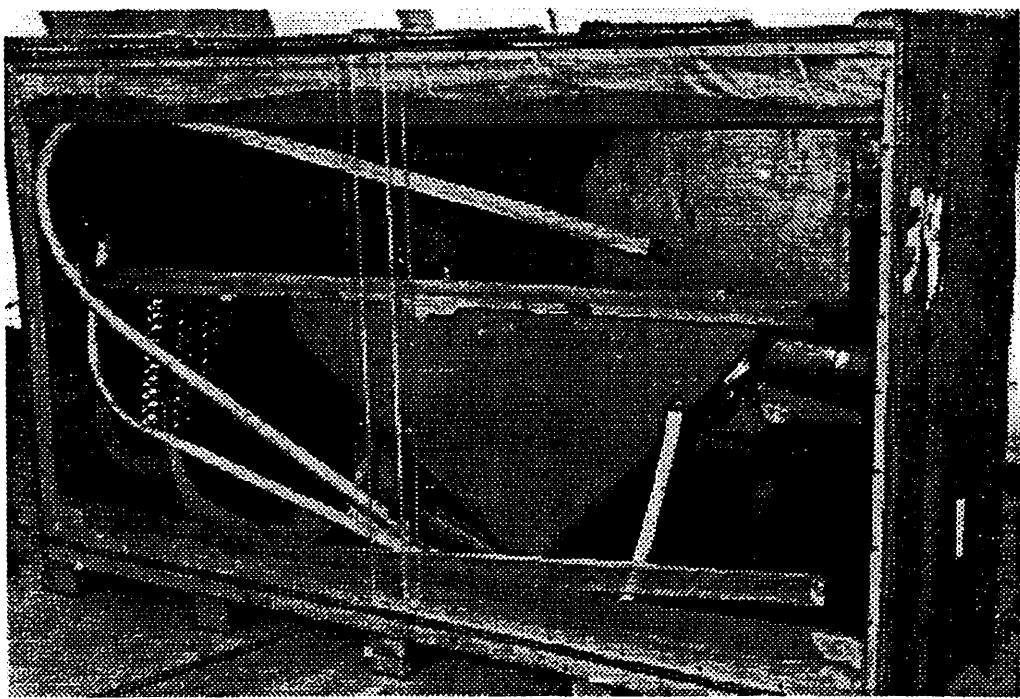


Figure 8-8. TSA Waste in Retrievable Storage.



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Figure 8-9. Typical TSA waste in boxes.



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Figure 8-10. Typical TSA waste in drums.

Table 8-1 presents a description of typical waste containers expected to be retrieved from storage. Table 8-2 identifies the estimated volume of waste in each pad and cell. The total (51,310 m³) represents approximately 79 percent of the total estimated TSA waste volume of 65,000 m³. The balance (21 percent) of the total represents waste which has been in retrievable storage such as in the air support building, but which is currently being moved to the storage modules. Table 8-3 identifies estimated waste volume by content code and Pad-by-Cell location. This identification of waste volume by content code can be used to correlate waste location to waste characterization information contained in this report and Appendices A and B detailed data reports. Table 8-4 identifies waste container type, number, and volume by estimated cell location. Table 8-5 identifies waste disposal year by generator and container type.

Table 8-1. Descriptions of waste containers expected to be retrieved from storage.^a

Container ^b	Description ^c	External ^c volume (ft ³)	Empty ^c weight (lbs)	Estimated distribution (volume %)
Drum:				
Metal (17C)	30-gallon (19.6 in. OD × 29.5 in.)	4.1	42	<1
Metal (17H)	55-gallon (23.4 in. OD × 34.75 in.)	7.5	50	36
Metal (17C)	55-gallon (23.4 in. OD × 34.75 in.)	7.5	67	1
Metal	83-gallon (27.5 in. OD × 38.2 in.)	11.2	101	1
Metal (6M)	100-gallon	13.4	128	<1
Metal	110-gallon ^d (23.4 in. OD × 69.5 in.)	15.0	100	<1
Box:				
Wood	35 in. × 62 in. × 112 in.	140.2	700	<1
Wood	62 in. × 63 in. × 104 in.	235.1	900	<1
Wood	48 in. × 52 in. × 84 in.	120.4	590	<1
Wood	105 in. × 110 in. × 61 in.	407.7	1300	<1
FRP ^e	4 ft × 2 ft × 7 ft	56.0	430	<1
FRP	4 ft × 4 ft × 7 ft	112.0	620	55
FRP	48 in. × 54 in. × 84 in.	126.0	670	<1
Metal	44 in. × 55 in. × 79 in.	110.6	470	<1
Metal	84 in. × 48 in. × 48 in.	112.0	480	<1
Metal	74.4 in. × 50.5 in. × 38.5 in.	83.3	400	<1
Metal	68 in. × 54 in. × 38.5 in.	82.1	390	<1
Metal	88 in. × 54 in. × 54 in.	147.8	540	3
Metal	50.4 in. × 58.4 in. × 72.4 in.	123.5	676	<1
Metal	112 in. × 68 in. × 77 in.	339.3	990	<1

Table 8-1. (continued).

Container ^b	Description ^c	External ^e volume (ft ³)	Empty ^e weight (lbs)	Estimated distribution (volume %)
Bin:				
Metal	50.4 in. × 58.4 in. × 72.4 in.	123.5	676	3
Metal ^f	50.4 in. × 58.4 in. × 76.5 in.	123.5	676	<1
Remote-handled canisters:				
Metal	26 in. OD × 121-in. long	37.3	1700	<1
Insert: Metal	23.4 in. OD x 34.75 in. long	7.5	50	<1

a. Other containers similar to listed containers may also be retrieved. The estimated distribution of non-listed containers is less than one volume percent (<1%). EDF PSPI-015546-03, January 5, 1994.

b. The condition of the stored boxes and bins is unknown. Drums, boxes or bins may require overpacking during retrieval. For the purposes of this SOW, it is estimated that approximately 10% of the drums may require overpacking. The 55-gallon drums may be overpacked in 83-gallon drums; 55-gallon or 83-gallon drums may be overpacked into boxes. Boxes or bins may be overpacked into larger boxes or bins. Oversize or special-case containers may be required for transport of a fraction of the retrieved waste containers.

c. The container dimensions, volume and weight listed are approximate. The INEL cannot guarantee the values listed.

d. Two 55-gallon drums connected to form a double-length cylinder.

e. FRP is Fiberglass Reinforced Polyester.

f. Same as the 50.4 in. × 58.4 in. × 72.4 in. with the addition of 4-in. lifting attachments on top of bin.

Note: The maximum weight of a 55-gal drum is expected to be 800 lbs. The maximum weight of other drums is expected to be 2000 lbs. For a box or bin, the maximum weight is expected to be 14,000 lbs.

Table 8-2. Transuranic Storage Area (TSA) estimated waste inventory.^a

Current Storage Location	Volume (m ³)
Pad 1 CELL 1	2.896E+03
Pad 1 CELL 2	4.560E+03
Pad 1 CELL 3	4.002E+03
Pad 1 CELL 4	3.587E+03
Pad 1 CELL 5	3.478E+03
Pad 1 CELL 6	1.742E+03
Pad 1 CELL 7	4.956E+03
Pad 1 CELL 8	2.808E+03
Subtotal	2.803E+04
PAD 2, CELL 1	4.235E+03
PAD 2, CELL 1A	1.937E+03
PAD 2, CELL 2	3.245E+03
PAD 2, CELL 3 (ASB-II)	6.680E+02
Subtotal	1.009E+04
Pad R CELL 1	3.927E+03
Pad R CELL 2	3.243E+03
Pad R CELL 3	5.929E+03
Subtotal	1.310E+04
ILTSF CELL	8.559E+01
Subtotal	8.559E+01
Total for Pads 1,2,R, and ILTSF	5.131E+04 m ³

a. EDF RWMC-837, August 24, 1995.

Table 8-3. TSA waste volume by storage location and content code.*

Storage Location	Content Code	Volume (m ³)
PAD 1 CELL 1	0	6.246E-01
	1	1.624E+02
	2	2.109E+02
	3	1.447E+02
	4	4.018E+01
	5	1.041E+00
	90	2.228E+01
	95	4.372E+00
	241	1.832E+01
	300	1.895E+01
	310	2.915E+00
	311	3.797E+00
	320	4.580E+00
	330	2.752E+02
	335	1.041E+00
	336	4.632E+02
	337	1.041E+02
	360	3.644E+01
	370	1.249E+00
	371	8.072E+01
	391	2.082E-01
	392	4.164E-01
	420	1.249E+00
	422	4.164E-01
	430	5.205E+00
	431	1.249E+00
	440	5.272E+01
	441	8.328E+00
	442	2.082E-01
	460	1.249E+00
	463	8.744E+00
	464	5.621E+00
	480	8.378E+02
	481	8.328E-01
	490	1.668E+02
	900	1.416E+01
	950	3.001E+01
	960	8.233E+01
	970	4.524E+01
	990	3.435E+01
	995	2.290E+00
	Subtotal	2.896E+03

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
PAD 1 CELL 2	0	7.703E+00
	1	1.672E+02
	2	4.891E+02
	3	1.332E+02
	4	3.123E+01
	5	1.041E+00
	90	1.853E+01
	241	1.749E+01
	290	1.041E+00
	300	3.748E+00
	320	3.581E+01
	330	9.238E+02
	335	5.830E+00
	336	2.053E+02
	337	6.704E+01
	360	1.166E+01
	370	2.040E+01
	371	1.693E+02
	422	1.041E+00
	440	5.247E+01
	463	1.874E+00
	464	1.041E+00
	480	1.320E+03
	481	1.874E+00
	490	1.562E+02
	900	8.453E+01
	950	5.978E+02
	960	3.414E+01
	Subtotal	4.560E+03
PAD1 CELL 3	0	6.246E-01
	1	2.028E+02
	2	2.444E+02
	3	1.705E+02
	4	5.358E+01
	5	1.041E+00
	90	2.521E+01
	95	5.001E+00
	241	1.978E+01
	300	2.231E+01
	310	3.123E+00
	311	3.797E+00

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	320	4.997E+00
	330	3.129E+02
	335	1.041E+00
	336	5.161E+02
	337	1.190E+02
	360	4.072E+01
	370	1.249E+00
	371	9.458E+01
	391	2.082E-01
	392	4.164E-01
	420	1.457E+00
	422	4.164E-01
	430	6.893E+00
	431	1.249E+00
	440	6.600E+01
	441	8.953E+00
	442	2.082E-01
	460	1.885E+00
	463	1.435E+01
	464	6.674E+00
	480	1.467E+03
	481	8.328E-01
	490	3.014E+02
	900	1.625E+01
	950	4.904E+01
	960	9.452E+01
	970	7.696E+01
	990	3.843E+01
	995	3.028E+00
Subtotal		3.999E+03
 PAD 1 CELL 4		
	1	1.360E+02
	2	5.673E+02
	3	1.699E+02
	4	6.778E+01
	5	1.041E+00
	241	1.666E+00
	300	3.003E+01
	301	1.457E+00
	302	4.164E-01
	320	1.457E+00
	330	1.480E+02

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	335	1.457E+00
	336	5.254E+02
	337	1.004E+02
	338	6.246E-01
	360	1.587E+01
	361	4.164E-01
	370	8.120E+00
	371	5.043E+01
	374	2.082E+00
	392	1.457E+00
	420	4.164E-01
	430	6.246E-01
	432	3.539E+00
	440	2.936E+01
	441	4.164E-01
	463	2.082E+00
	464	5.205E+00
	480	9.236E+02
	490	5.086E+01
	900	3.730E+01
	950	1.702E+02
	960	5.080E+02
	970	1.092E+01
	990	4.580E+00
	995	8.536E+00
Subtotal		3.587E+03
PAD 1 CELL 5		
	1	1.387E+02
	2	8.203E+01
	3	5.809E+01
	4	1.457E+01
	241	4.164E-01
	300	1.103E+01
	302	7.801E+00
	320	2.915E+00
	330	1.147E+02
	335	3.331E+00
	336	1.843E+02
	337	5.365E+01
	338	4.738E+01
	339	2.082E+00
	360	6.246E-01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	371	6.377E+01
	374	6.978E+01
	375	4.164E-01
	432	2.915E+00
	440	1.208E+01
	441	1.811E+01
	480	1.660E+03
	481	1.874E+00
	490	3.402E+02
	900	1.780E+01
	950	4.838E+02
	960	9.785E+00
	970	7.613E+01
	980	4.164E-01
Subtotal		3.478E+03
PAD 1 CELL 6		
	1	7.641E+01
	2	7.141E+01
	3	4.435E+01
	4	1.353E+01
	10	2.404E+01
	20	3.539E+00
	30	2.082E-01
	300	2.582E+01
	301	2.082E-01
	302	6.246E-01
	320	1.874E+00
	330	7.599E+01
	335	1.874E+00
	336	1.534E+02
	337	4.653E+01
	338	9.886E+01
	339	8.328E-01
	371	3.625E+01
	374	9.479E+01
	432	1.874E+00
	440	6.454E+00
	441	6.246E+00
	480	6.417E+02
	490	7.379E+01
	900	1.374E+01
	950	6.682E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	960	4.078E+00
	970	3.806E+01
	990	7.308E+01
	995	4.601E+01
	Subtotal	1.742E+03
PAD 1 CELL 7	1	2.026E+02
	2	2.996E+02
	3	1.330E+02
	4	2.832E+01
	5	6.246E-01
	10	5.892E+01
	20	4.206E+01
	30	7.287E+00
	40	2.082E-01
	100	1.631E+02
	292	1.249E+00
	300	3.248E+01
	301	2.082E-01
	302	2.262E+01
	320	5.830E+00
	330	4.745E+02
	335	1.145E+01
	336	2.851E+02
	337	6.620E+01
	338	1.598E+02
	339	6.454E+01
	371	7.079E+00
	372	6.246E-01
	374	1.356E+02
	375	2.082E+00
	411	2.082E-01
	422	6.246E-01
	432	8.328E+00
	440	1.686E+01
	441	1.395E+01
	442	1.457E+00
	480	2.200E+03
	481	6.537E+01
	490	3.999E+02
	900	4.164E+00
	950	1.586E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	960	3.398E-01
	970	6.344E+00
	995	1.791E+01
	Subtotal	4.956E+03
PAD 1 CELL 8	1	1.493E+02
	2	1.443E+02
	3	9.098E+01
	4	1.895E+01
	5	3.172E+00
	10	5.351E+01
	20	5.934E+01
	30	4.164E-01
	40	2.082E-01
	100	7.476E+01
	101	4.417E+01
	292	7.287E+00
	300	4.580E+01
	301	4.789E+00
	302	6.344E+00
	310	2.082E-01
	320	9.577E+00
	330	3.921E+02
	335	2.498E+00
	336	2.394E+01
	337	1.811E+01
	338	4.997E+00
	339	2.915E+01
	371	3.331E+00
	372	4.164E-01
	374	1.759E+01
	422	1.041E+00
	432	3.956E+00
	440	2.832E+01
	441	1.272E+02
	442	2.915E+00
	480	6.114E+02
	481	1.728E+01
	490	2.635E+02
	824	1.269E+01
	834	4.351E+01
	835	4.393E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	836	2.940E+02
	838	2.082E-01
	842	1.142E+02
	847	1.457E+01
	848	2.290E+01
	900	6.246E-01
	950	8.328E-01
	990	2.082E-01
	Subtotal	2.808E+03
PAD 2 CELL1		
	1	2.221E+02
	2	2.142E+02
	3	1.453E+02
	4	4.851E+01
	10	5.705E+01
	20	5.996E+01
	30	1.249E+00
	40	3.123E+00
	100	2.650E+02
	150	2.290E+00
	152	4.164E-01
	154	2.082E-01
	155	4.005E+00
	292	2.332E+01
	300	2.457E+01
	301	4.164E-01
	302	1.903E+01
	311	6.246E-01
	320	7.079E+00
	330	7.907E+02
	336	2.383E+01
	337	3.019E+01
	338	8.120E+00
	339	1.520E+01
	370	4.164E-01
	371	7.079E+00
	374	5.030E+01
	376	9.545E+01
	391	1.249E+00
	393	3.331E+00
	410	2.290E+00
	421	1.624E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	422	6.246E-01
	432	1.562E+01
	440	2.686E+01
	441	1.276E+02
	442	2.082E-01
	480	1.173E+03
	481	2.712E+01
	490	1.713E+02
	801	6.454E+00
	802	4.164E+00
	803	9.994E+00
	804	9.785E+00
	805	2.082E+00
	810	8.328E-01
	811	8.328E-01
	813	6.246E-01
	824	2.538E+01
	825	3.123E+00
	834	3.165E+01
	835	1.108E+02
	836	1.753E+02
	847	3.727E+01
	970	6.344E+00
	976	6.490E+01
	978	3.489E+01
	995	2.538E+01
	Subtotal	4.235E+03
PAD 2 CELL 1A		
	100	3.466E+02
	101	8.495E+01
	201	9.175E+01
	202	1.699E+01
	203	1.359E+01
	330	5.297E+02
	480	3.553E+02
	490	2.094E+02
	824	2.887E+02
	Subtotal	1.937E+03
PAD 2 CELL 2		
	1	2.413E+02
	2	1.555E+02
	3	2.299E+02

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	4	3.435E+01
	10	5.413E+00
	20	4.164E-01
	30	2.082E-01
	40	1.832E+01
	150	1.041E+00
	152	8.328E-01
	153	2.082E-01
	154	2.082E-01
	155	2.082E-01
	201	8.744E+00
	202	6.246E-01
	203	5.413E+00
	204	1.041E+00
	292	1.499E+01
	300	2.519E+01
	302	6.246E-01
	320	2.020E+01
	330	8.689E+02
	336	1.374E+01
	337	3.081E+01
	339	1.228E+01
	370	4.164E-01
	371	7.912E+00
	374	6.246E-01
	375	6.246E-01
	376	9.894E+01
	391	2.290E+00
	393	2.082E-01
	410	2.290E+00
	420	2.082E-01
	421	4.580E+00
	422	2.082E-01
	432	7.287E+00
	440	3.290E+01
	441	3.227E+01
	442	9.952E+01
	480	4.179E+02
	481	5.122E+01
	490	2.157E+02
	802	1.437E+01
	803	1.686E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	804	2.269E+01
	805	4.372E+00
	810	1.041E+00
	814	4.164E-01
	824	2.538E+01
	825	1.332E+01
	834	1.037E+02
	835	9.785E+01
	836	1.936E+02
	847	5.726E+01
	848	3.123E+00
	970	2.538E+01
	Subtotal	3.245E+03
PAD 2 CELL 3 (ASB-II)	1	7.849E+01
	2	2.727E+01
	3	4.247E+01
	4	1.437E+01
	7	3.123E+00
	10	2.707E+00
	20	4.164E-01
	40	3.331E+00
	102	6.871E+00
	105	2.082E-01
	150	6.246E-01
	153	2.082E-01
	155	4.164E-01
	241	2.082E-01
	292	1.666E+00
	300	1.166E+01
	301	4.164E-01
	302	2.082E-01
	320	3.956E+00
	330	9.052E+01
	335	1.041E+00
	336	6.996E+01
	337	3.352E+01
	338	2.498E+00
	339	6.246E-01
	371	5.621E+00
	374	7.703E+00
	376	3.748E+00

Table 8-3. (continued).

Storage Location	Content Code	Volume (m ³)
	393	2.082E-01
	414	2.082E-01
	421	2.082E-01
	432	3.123E+00
	440	7.495E+00
	441	4.164E-01
	442	1.187E+01
	464	2.082E-01
	480	1.668E+02
	481	1.666E+00
	490	2.082E-01
	803	4.164E-01
	804	2.082E-01
	825	8.328E-01
	834	6.246E-01
	835	1.083E+01
	836	2.915E+00
	847	4.789E+00
	848	4.164E-01
	900	3.748E+00
	950	3.000E+01
	960	6.246E+00
	970	6.246E-01
	Subtotal	6.680E+02
PAD R CELL 1	0	3.851E+03
	330	6.661E+01
	336	3.172E+00
	376	3.172E+00
	490	3.172E+00
	Subtotal	3.927E+03
PAD R CELL 2	100	2.039E+01
	101	3.398E+00
	102	1.019E+01
	156	2.538E+01
	330	1.145E+03
	376	3.172E+00
	480	6.439E+02
	490	3.648E+02
	824	9.949E+02
	825	3.172E+00

Table 8-3. (continued).

<u>Storage Location</u>	<u>Content Code</u>	<u>Volume (m³)</u>
	826	2.908E+01
	Subtotal	3.243E+03
PAD R CELL 3		
	3	1.903E+01
	4	3.172E+00
	100	2.039E+02
	101	5.777E+01
	102	2.718E+01
	104	3.398E+00
	156	3.964E+00
	302	3.172E+00
	330	4.276E+03
	336	3.172E+00
	338	3.172E+00
	374	6.344E+00
	440	3.172E+00
	480	5.392E+02
	481	6.661E+01
	490	4.504E+02
	824	2.126E+02
	826	3.409E+01
	950	6.344E+00
	970	6.344E+00
	Subtotal	5.929E+03
ILTSF RH-TRU WASTE		
	30	3.964E-01
	104	4.657E+01
	107	2.124E+01
	150	6.274E+00
	151	2.272E-01
	152	1.982E-01
	153	4.455E+00
	158	5.607E+00
	160	1.982E-01
	161	4.164E-01
	Subtotal	8.559E+01

a. EDF RWMC-837, August 24, 1995.

Table 8-4. Cell location by container type, number, and volume.

Storage Location	Container Type*	Drum Qty	Drum Vol (m3)	Box Qty	Box Vol (m3)	Box Qty	Bin Vol (m3)	Total Vol (m3)
Pad 1 Cell 1	55 Gallon (17 H) BOX	9,147	1,904.0		312	989.7		1,904.0
	FRP (MRC)				14	2.4		989.7
	Subtotal	9,147	1,904.0	326	992.0			2.4
								2,896.0
Pad 1 Cell 2	55 Gallon (17 H) BOX	12,732	2,651.0		602	1,910.0		2,651.0
	Subtotal	12,732	2,650.8	602	1,910.0			1,910.0
								4,560.0
Pad 1 Cell 3	55 Gallon (17 H) 83 Gallon BOX	8,573	1,785.0		563	1,786.0		1,785.0
	FRP (MRC)	1,349	423.9		26	4.4		423.9
	Subtotal	9,922	2,209.0	589	1,790.0			1,786.0
								4.4
Pad 1 Cell 4	55 Gallon (17 H) 83 Gallon BOX	8,454	1,760.0		486	1,542.0		1,760.0
	Subtotal	9,008	285.3		486	1,542.0		285.3
								1,542.0
								3,587.0
Pad 1 Cell 5	55 Gallon (17 H) BOX	4,061	845.5		830	2,633.0		845.5
	Subtotal	9,362	2,045.0		830	2,633.0		2,633.0
								3,478.0
Pad 1 Cell 6	55 Gallon (17 H) 83 Gallon BOX	3,609	751.4					751.4
	FRP (MRC)	52	16.3					16.3
	Subtotal	3,661	767.7					970.6
								970.6
Pad 1 Cell 7	55 Gallon (17 H) BOX	8,195	1,706.0		973	3,086.0		1,706.0
	FRP (MRC)				1	0.3		3,086.0
	M-III, M-IV BIN							0.3
	Subtotal	8,195	1,706.0	974	3,087.0	48	163.1	163.1
Pad 1 Cell 8	55 Gallon (17 H) BOX	6,443	1,341.0		425	1,348.0		1,341.0
	M-III, M-IV							1,348.0
								118.9

Table 8-4. (continued).

Storage Location	Container Type*	Drum Qty	Drum Vol (m3)	Box Qty	Box Vol (m3)	Bin Qty	Bin Vol (m3)	Total Vol (m3)
	Subtotal	6,443	1,341.0	425	1,348.0	35	118.9	2,808.0
Pad 2 Cell 1	55 Gallon (17 H) BOX	8,069	1,680.0	722	2,290.0	78	265.0	1,680.0
	M-III, M-IV Subtotal	8,069	1,680.0	722	2,290.0	78	265.0	2,290.0
								265.0
								4,235.0
Pad 2 Cell 1A	BOX M-III, M-IV Subtotal			436	1,383.0	163	553.9	1,383.0
				436	1,383.0	163	553.9	553.9
								1,937.0
Pad 2 Cell 2	55 Gallon (17 H) BOX Mexican AM Standard Waste Box Subtotal	8,186	1,704.0		355	1,126.0		1,704.0
					137	372.5		1,126.0
					18	42.1		372.5
					510	1,541.0		42.1
								3,245.0
Pad 2 Cell 3 (ASB-II)	55 Gallon (17 H) BOX Subtotal	2,153	477.6		60	190.3		477.6
					60	190.3		190.3
								668.0
Pad R Cell 1	55 Gallon (17 H) 83 Gallon Drum BOX M-III, M-IV BIN Subtotal	2,153	477.6		76.1			3,004.0
					76.1			789.0
								76.1
								57.8
								3,927.0
Pad R Cell 2	BOX M-III, M-IV BIN Plywood Box (RFP) Subtotal			823	3,196.0	10	34.0	3,196.0
					4	13.7		34.0
					827	3,210.0	10	13.7
								3,243.0
Pad R Cell 3	BOX M-III, M-IV BIN Plywood Box (RFP) Sand Type I Subtotal			871	2,763.0	86	292.2	2,763.0
					74	250.7		292.2
					827	2,623.0		250.7
					1,772	5,637.0	86	2,623.0
								5,5

Table 8-4. (continued).

Storage Location	Container Type*	Drum Qty	Drum Vol (m3)	Box Qty	Box Vol (m3)	Bin Qty	Bin Vol (m3)	Total Vol (m3)
ILTSF RH-TRU	30 Gallon (17C) 55 Gallon (17 H) 83 Gallon UNKNOWN Subtotal	616 15 4 635	70.0 3.1 1.1 74.2	38 38	11.4 11.4			70.0 3.1 1.1 11.4 85.6
TSA	Grand Total	99,506	21,200.0	8,939	28,610.0	437	1,485.0	51,300.0
a.	Container Type		Container Dimensions					
	30 Gallon (17C)		"19-19/32"" OD x 29-1/2"					
	55 Gallon (17 H)		"23-7/16"" OD x 34-9/16""					
	83 Gallon		"27-1/2"" OD x 38-1/8""					
	83 Gallon Drum		"27-1/2"" OD x 38-1/8""					
	BOX		"84"" X 48"" X 48""					
	BOX		"108"" x 72.5"" x 60.625"" (est)"					
	FRP (MRC)		"24"" x 24"" x 18""					
	FRP (MRC)		"36"" x 24"" x 24""					
	"M-III, M-IV"		50-3/8 x 58-3/8 x 72-3/8					
	"M-III, M-IV BIN"		50-3/8 x 58-3/8 x 72-3/8					
	Mexican AM (RWM/C)		"72"" x 72"" x 48""					
	Plywood Box (RFP)		"84"" X 52"" X 48""					
	Plywood Box (RFP)		"112"" X 62"" X 35"" (est)"					
	Plywood Box (RFP)		"84"" X 48"" X 48"" (est)"					
	Plywood Box (RFP)		"112"" X 62"" X 35"" (est)"					
	Sand Type I		"84"" X 48"" X 48""					
	Standard Waste Box		"72"" x 54-1/4"" x 37""					

Table 8-5. TSA disposal year by generator and container type.

Disposal Year	Generator Historical Identifier Code	Generator Current Identifier Code	Estimated Container Type Disposed*
70	CFA	INEL	BLM
	RFO	RFP	BLM, BXW
71	ANL	ANL-W	BLM
	ARA	INEL	BLM, BXW
	CPP	INEL	BLM
	NRF	INEL	BLM
	RFO	RFP	BLM, BXW
72	ARA	INEL	BLM
	CPP	INEL	BLM, unknown
	NRF	INEL	unknown
	RFO	RFP	BLM, BXW
	TRA	INEL	BLM, unknown
73	ANL	ANL-W	BLM, unknown
	BET	Bettis	BLM
	CPP	INEL	BLM
	RFO	RFP	BLM, BXW
	TRA	INEL	BLM, unknown
74	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	CPP	INEL	BLM
	RFO	RFP	BLM, BXW
	TRA	INEL	BLM
	WMC	RFP	BLM
75	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	CPP	INEL	BLM
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
	TAN	INEL	BLM, unknown
	TRA	INEL	BLM, BXW, unknown
	WMC	RFP	BLM
76	ALE	ANL-E	BIN
	ANL	ANL-W	BLM, unknown
	BET	Bettis	BLM
	CPP	INEL	BLM
	MRC	Mound	BLM
	NRF	INEL	unknown
	RFO	RFP	BLM, BXW

Table 8-5. (continued).

Disposal Year	Generator Historical Identifier Code	Generator Current Identifier Code	Estimated Container Type Disposed ^b
	RFO	RFP	BLM, BXW
	TRA	INEL	unknown
77	ALE	ANL-E	BIN
	ANL	ANL-W	BLM, BXC
	BET	Bettis	BLM
	MRC	Mound	BLM, BXW
	NRF	INEL	unknown
	RFO	RFP	BLM, BXW
	TRA	INEL	unknown
	WMC	RFP	BIN, BLM, unknown
78	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BCL	Battelle Columbus	BLM
	BET	Bettis	BLM
	MRC	Mound	BLM
	NRF	INEL	BLM
	RFO	RFP	BLM, BXW
	WMC	RFP	BIN, BLM
79	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BCL	Battelle Columbus	BIN
	BET	Bettis	BLM
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
	TAN	INEL	BLM
	TRA	INEL	BLM
	WMC	RFP	BLM
80	ALE	ANL-E	BIN, BLM
	ANL	ANL-W	BLM
	BCL	Battelle Columbus	BIN, BXW
	BET	Bettis	BLM
	CPP	INEL	BLM
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
81	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BCL	Battelle Columbus	BIN, BLM
	BET	Bettis	BLM
	CPP	INEL	BXW

Table 8-5. (continued).

Disposal Year	Generator Historical Identifier Code	Generator Current Identifier Code	Estimated Container Type Disposed ^b
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
82	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	CFA	INEL	BLM
	CPP	INEL	BXW
	MRC	Mound	BLM, BXW
	NRF	INEL	BLM
	RFO	RFP	BLM, BXW
	TAN	INEL	BLM
	TRA	INEL	BLM
83	ALE	ANL-E	BIN, BLM
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
84	ALE	ANL-E	BIN, BLM
	ANL	ANL-W	BLM
	CPP	INEL	BIN, BLM
	MRC	Mound	BXW
	RFO	RFP	BLM, BXW
	TRA	INEL	BLM
85	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	MRC	Mound	BXW
	RFO	RFP	BLM, BXM, BXW
	TRA	INEL	BLM
86	ALE	ANL-E	BIN, BLM
	ANL	ANL-W	BLM
	BEN	Bendix	BLM
	RFO	RFP	BLM, BXM
	TRA	INEL	BLM
87	ALE	ANL-E	BLM
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	LOF	INEL	BLM
	MRC	Mound	BLM, BXM

Table 8-5. (continued).

Disposal Year	Generator Historical Identifier Code	Generator Current Identifier Code	Estimated Container Type Disposed ^b
88	RFO	RFP	BLM, BXM
	TRA	INEL	BLM
	WMC	RFP	BLM
89	ANL	ANL-W	BLM
	MRC	Mound	BLM, BXM
	RFO	RFP	BLM, BXM
90	ANL	ANL-W	BLM, RD5, RDL
	RFO	RFP	BLM, BXM
91	ANL	ANL-W	BLM, RDL
	D+D	INEL	RD5
	NRF	INEL	RD5
92	ANL	ANL-W	RDL
	RFO	RFP	BIN
92	ANL	ANL-W	RDL

a. WM-PD-90-003, Rev. 1, August 31, 1993.

b. BXC - cardboard box, BLM - metal barrel, BXW - wooden box, BIN - bin (other than WERF only bins), RD5 - metal barrel, 55 gal., without liner, RDL - metal barrel, 55 gal. With liner, 0 other.

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- 4-3. I. R. Terry, "A Practical Algorithm to Derive the (α , n) Source Term in a Composite Mixture Containing Actinides," *Nuclear Science Engineering* 113, p. 282, 1993.

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